Can game theory resolve the Israel-Hezbollah war? By Tim Harford

Hezbollah and the Prisoner's Dilemma

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Israel's strategy for dealing with Hezbollah has been called "tenfold deterrence": Any attack will be met with a far more forceful counterattack. Unfortunately both for Israelis and Lebanese, the strategy did not deter Hezbollah's missiles.

It might seem strange for an economist to offer even these obvious opinions on military strategy, but economists have been armchair generals since the development in the 1940s of game theory by John Von Neumann, a mathematician, and Oskar Morgenstern, an economist. Game theory is the study of situations in which each side's actions influence and are influenced by the other side's actions. Since the Second World War, game theorists have pondered strategy, deterrence, and Armageddon.

Game theory's power to summarize complex situations in a simple model is sometimes too seductive. The two most overinterpreted ideas in game theory are related to deterrence: the prisoner's dilemma and the strategy sometimes believed to "solve" the dilemma, "tit for tat."

The prisoner's dilemma was popularized by a simple story. Two men are captured by the police and separately offered the same plea-bargain: "If you confess and he doesn't, you walk free; if you both confess, you'll both get five years; if neither of you confess, you'll both get one year; if he confesses and you don't, you'll get 20 years." Rational prisoners will confess, wishing there was a way to commit each other to silence.

Game theorists have known since the 1950s that when the prisoner's dilemma is repeated indefinitely, more cooperative strategies can flourish. This insight was independently rediscovered and made famous by Robert Axelrod, a political scientist who organized a computerized tournament in which competitors submitted simple programs to play the prisoner's dilemma. The champion was "tit for tat," which begins by cooperating with its fellow prisoner (staying silent) but punishes a squealer by confessing on the next turn. Axelrod argued that "tit for tat" was successful because it was easy to interpret, hard to exploit, began cooperatively, and quickly forgave transgressions by returning to cooperation.

The undersecretary of the Department of Homeland Security offered a version of the prisoner's dilemma to explain the failure of the National Strategy for the Physical Protection of Critical Infrastructures and Key Assets.

The most important lesson of game theory is that we should think of the world as a game. We are not born into a world, we are born into a game.
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